NUMBER 21

SU.85 and SU.100 Tank Destroyer

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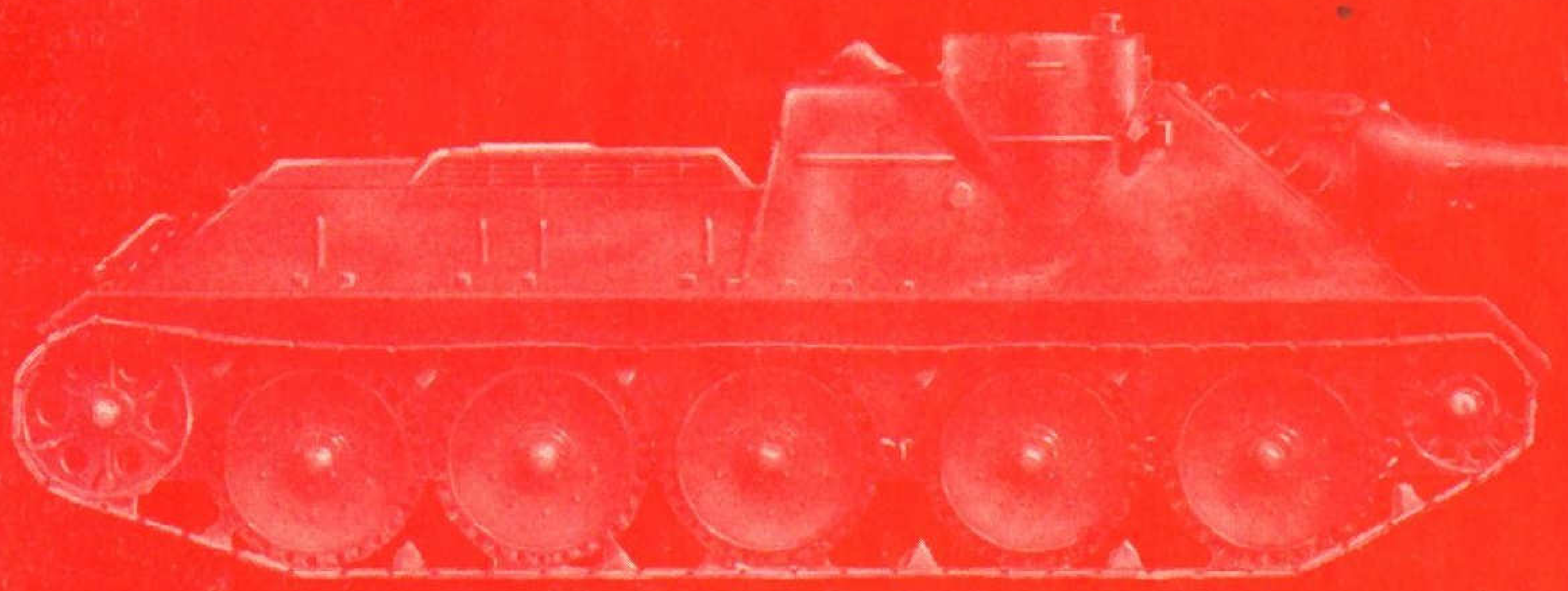
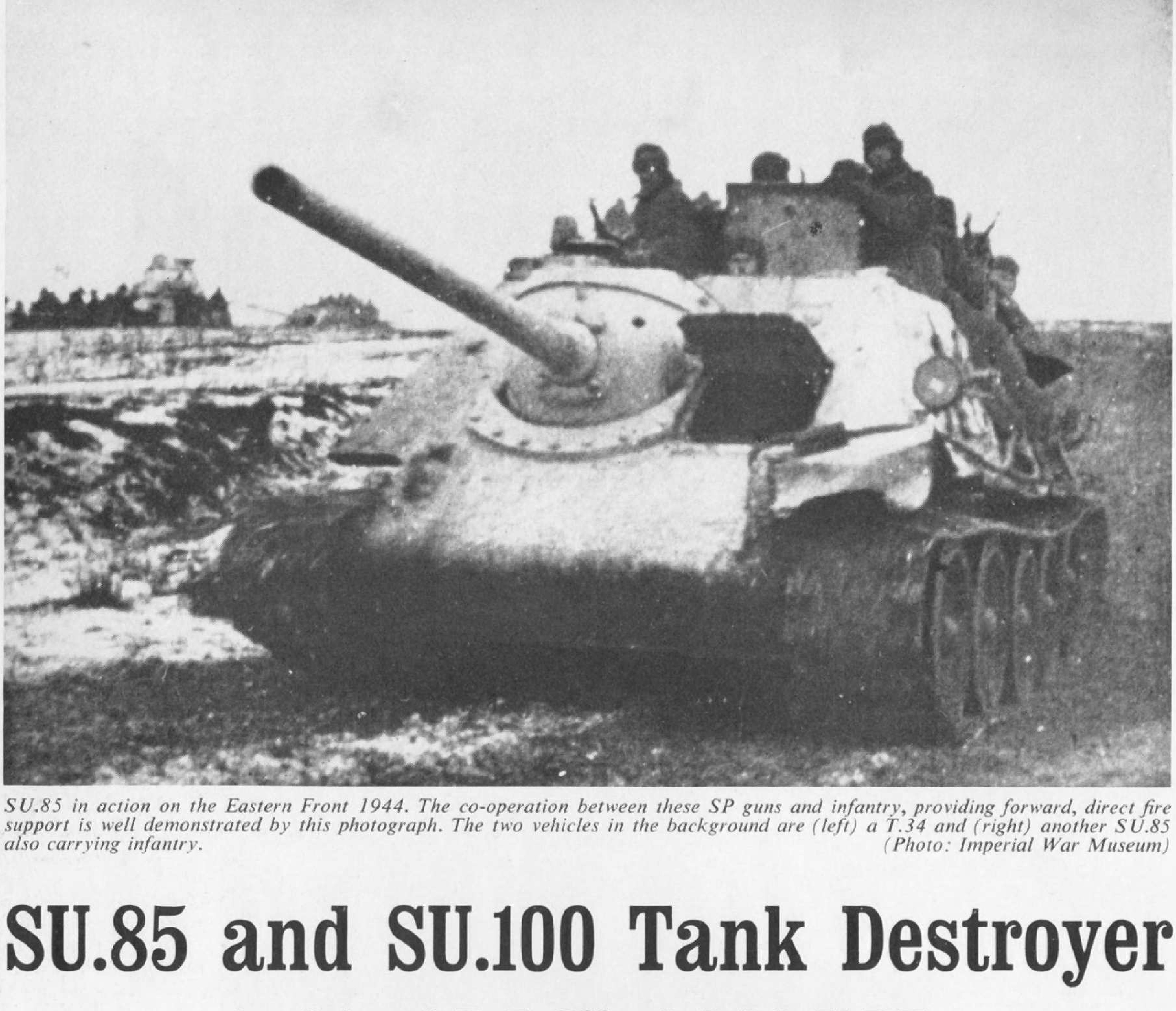


ARMOUR IN PROFILE



SU.85 in action on the Eastern Front 1944. The co-operation between these SP guns and infantry, providing forward, direct fire support is well demonstrated by this photograph. The two vehicles in the background are (left) a T.34 and (right) another SU.85 also carrying infantry. *(Photo: Imperial War Museum)*

SU.85 and SU.100 Tank Destroyer

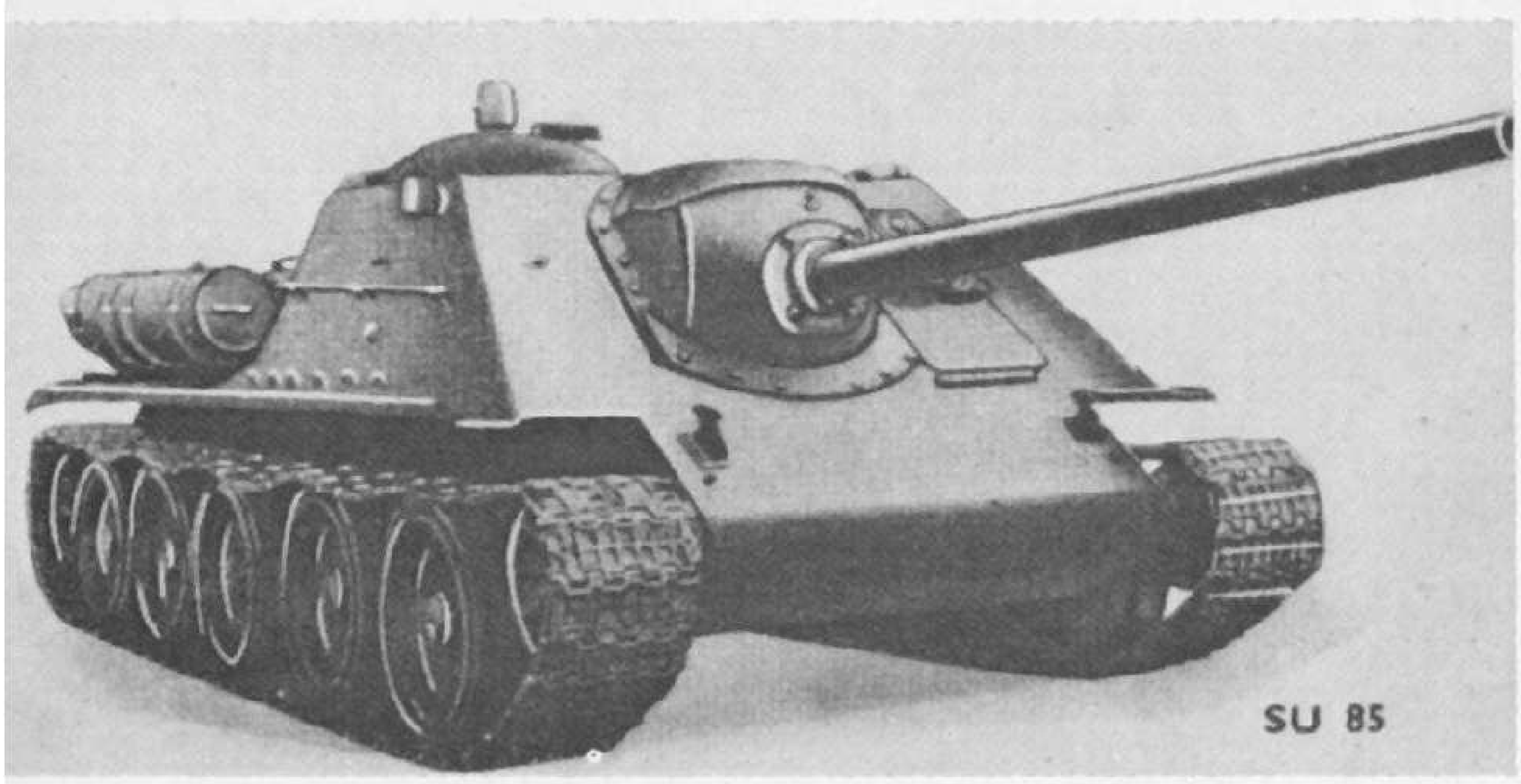
by Colonel E. F. Offord, D.S.O. M.B.E.

THE Samoknya Ustanokova self-propelled mountings were first introduced into the Russian Army towards the end of 1942. The first to appear was the SU.76—a 76·2 mm. anti-tank gun mounted on a lengthened T-70 chassis. This was quickly followed into service by the SU.122, a 122 mm. howitzer on a T-34 chassis (*Profile* 9) and the SU.152, a gun howitzer on a KV-1 chassis.

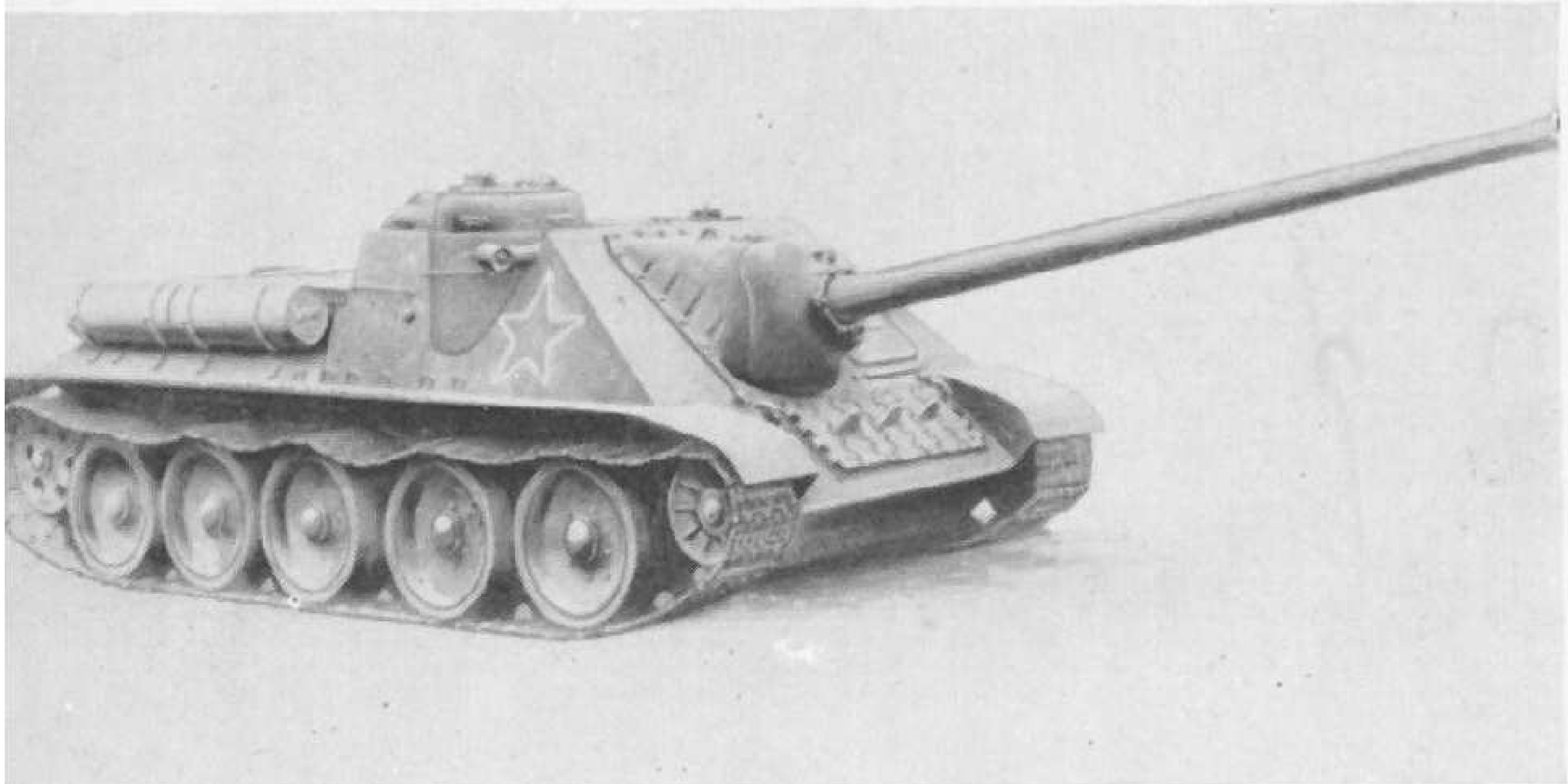
As soon as the SU.76 was introduced the Russians appreciated that the 76·2 mm. gun was not powerful enough to compete with contemporary German armour. This, coupled with the fact that it had an open top and a high silhouette, meant that it was only a stopgap and it was soon superseded by the SU.85—an 85 mm. anti-tank gun on a T-34 chassis. This remained the principal Russian tank destroyer and close support assault gun until late in 1944 when it was replaced by the SU.100—a modified 100 mm. anti-tank gun also mounted on the T-34 chassis—which has remained in service up to the present day.

The origins of the SU fighting vehicles can be traced, like so many other armour concepts of World War II, to studies and developments carried out in Germany after the defeat of 1918 which, over the next 15 years, inspired German Army leaders to a radical analysis of modern war. One of their earliest and most significant conclusions was that the firepower of the infantry must be increased. An expression of this was the development of the tracked, armoured carrier (*Profile* 18); another, more directly related to firepower, was the *Sturmgeschütz* or infantry assault gun. The central purpose of this weapon was to provide direct fire support, immediately when required and in the forward battle area. Compromise solutions offered by SP artillery or the so-called infantry tank were rejected from the outset, the new weapons being organised in regimental infantry gun companies. Low velocity, HE guns first used were soon replaced with high velocity dual-purpose weapons, effective in both the anti-tank and support or assault rôles. This combination produced the ultimate Panzerjäger vehicles, the light Jagdpanzer 38(t) Hetzer (*Profile* 56), medium Jagdpanzer IV (*Profile* 8) and heavy Jagd-Tiger (*Profile* 20). The Russians were quickly impressed by this German philosophy which, in any case, closely matched their already well-established artillery traditions of direct fire support with weapons of maximum weight.

The SU.85 and SU.100 were thus conceived from the outset as a combination of assault guns and tank destroyers. They always fired by direct methods—as did the German *Jagpanzer* and *Sturmgeschütz*. The



Two stock photographs demonstrating essential differences between SU.85 and SU.100. Apart from the marked differences in the gun mantlets it will be noted that the SU.100 commander's cupola is fully rotating and projects over the side plate. The SU.100 also has two mushroom ventilators behind the cupola, one of which is visible in this photograph.
(Photos: School of Tank Technology)



difference between these vehicles and the tanks on which they were based was primarily the simplified gun mounting in a fixed forward position, with limited traverse. The tank, traditionally, has its main armament mounted in a turret with 360° traverse. The self-propelled mounting, as exemplified by SU.85 and SU.100, has a limited traverse. The amount of traverse in the SU.85 was 20° and in SU.100, 16°.

FIRE POWER

The fundamental reason for introducing a limited traverse SP vehicle as a complement to the tanks was because this simplification made it possible to mount, on the same basic chassis, a heavier and more powerful gun in a limited traverse vehicle than in a tank. This concept is well illustrated by the following outstanding examples from World War II:

Basic chassis	*Tank gun*	*SP gun*
PzKpfw 38(t) (*1*)	37 mm.	HETZER—75 mm.
PzKpfw III (*2*)	50 mm.	STU 9 III—75 mm.
Panther (*3*)	75 mm.	JagdPanther—88 mm.
T-34/76 (*4*)	76 mm.	SU.85—85 mm.
T-34/85 (*5*)	85 mm.	SU.100—100 mm.
Tiger (*6*)	88 mm.	JagdTiger—128 mm.
Joseph Stalin (7)	122 mm.	JSU.152—152 mm.

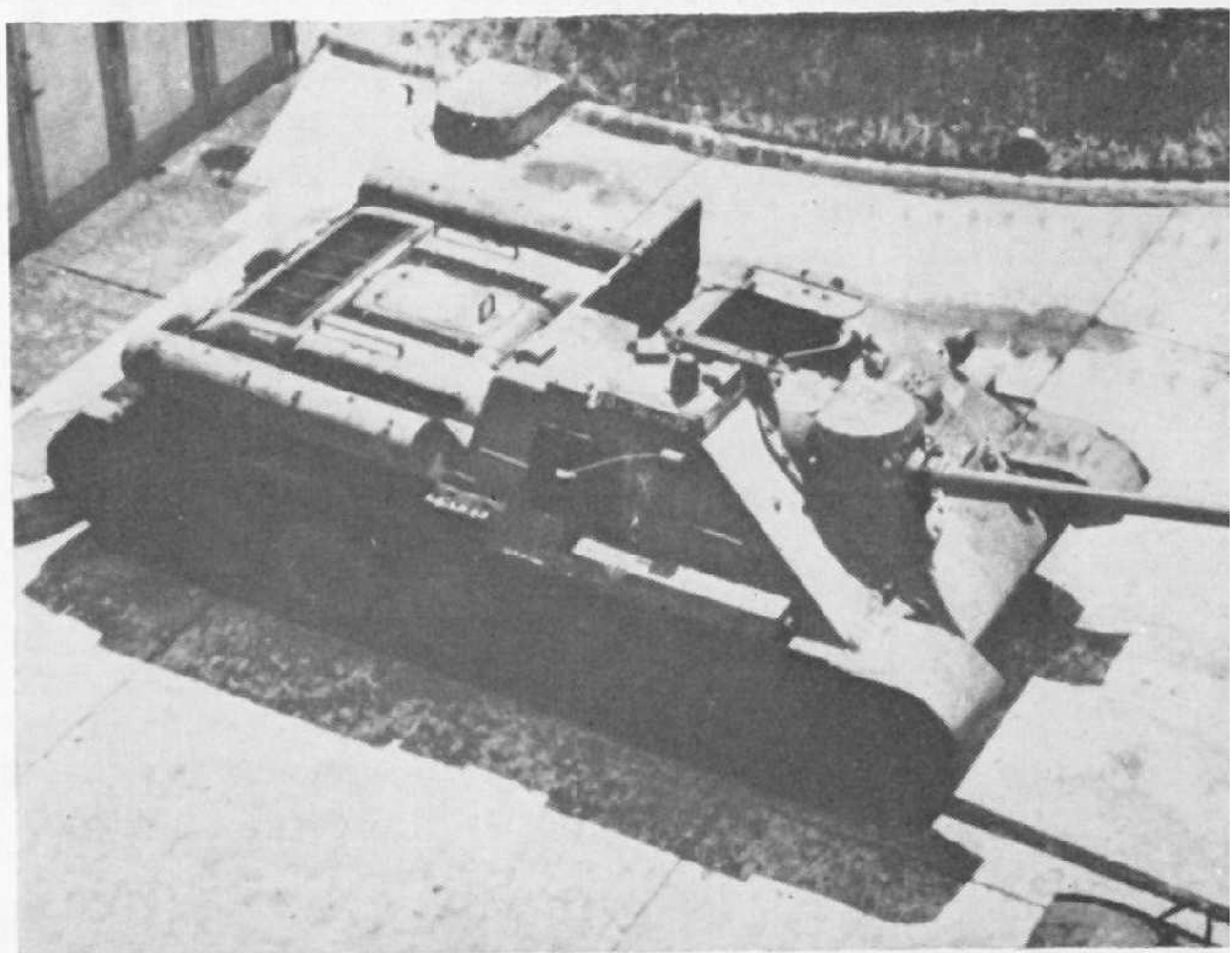
(*1*) *Profile* 56 and 62. (*2*) *Profile* 26. (*3*) *Profile* 38. (*4*) *Profile* 9. (*5*) *Profile* 39. (*6*) *Profile* 2 and 20. (*7*) *Profile* 69.

The obvious drawback of these weapons arose when they were confronted with a target outside the arc of their limited traverse. They had to swing or pivot on tracks in order to engage the target, and this manoeuvre was impossible if the vehicle was dug in, hull down in a sunken road, or in a fire position against an obstacle such as a tree or building. If the SU had to move or alter position to get the target within its traverse arc, then time was wasted and there was a real chance of it disclosing its position before it could fire. However, the Russians, always quick to exploit basic AFV developments, fully appreciated that if the tactical disadvantages of a limited traverse vehicle were accepted, there were other rewards to be gained, apart from the bigger gun. These included a lower silhouette and higher rate of fire. More ammunition could be stowed and the simplified SU vehicles were cheaper to produce. Alternatively, the same calibre of gun could be mounted as in a tank, but thicker armour could be used.

Modern designs have qualified this differentiation between the self-propelled gun and the tank. For example, the Abbot—the latest British SP 105 mm. Gun/Howitzer on the basic FV 430 series chassis—has all-round traverse. The Swedish "S" Tank, on the other hand, has forward fixed main armament, the traverse being carried out by pivoting on the tracks. Indeed, even as the war progressed, the Russians, like the Germans used the SU vehicles increasingly in concert with the tanks in their armoured formations.

DEVELOPMENT HISTORY

The Russians were investigating self-propelled mountings as far back as 1934. None got beyond the experimental or prototype stage. One of these, for example, mounting an 85 mm. anti-aircraft gun on the



Further comparisons between SU.85 and SU.100. Note that the SU.85 gunner's hatch is bowed forward projecting over the front plate left of the gun mounting. The plain, square crew access hatch is also shown open on the SU.85. The SU.100 is a late model in Egyptian Army service.
(Photos: Imperial War Museum)

T-70 chassis for use as a tank destroyer, was dropped because the gun was too long for the hull. All models were open top types or with the gun mounted on a tracked chassis with only a gun shield for crew protection. The only example of the pure tank destroyer to reach service was, as already mentioned, the SU.76 in 1942. In fact, when the Germans launched Operation Barbarossa, the invasion of Russia in 1941, the 76·2 mm. was a good anti-tank weapon. A considerable number of these guns. captured by the Germans, were shipped out to North Africa and used with great effect against British tanks in the Western Desert. But, by 1942, when the SU.76 came into service, it was already outdated by the German heavy tanks and, in October of that year, the Russian Defence Commissariat issued a requirement for fully protected, limited traverse equipment. This resulted in a remarkably short space of time in the SU.85, SU.122 and SU.152.

THE ANIMAL KILLER

The SU.85 and SU.122 were mounted on the T-34 chassis and the SU.152 on the KV-1 chassis. The SU.85 was primarily a tank destroyer although it could fire high explosive rounds in assault or support rôles. The SU.122 and SU.152 were armed with field gun/howitzers and their primary rôle was support with HE shell.

Some idea of the urgency of the requirement for these weapons in 1942 can be assessed by the fact that the Russian tank designer Z. J. Kotina completed the design of the SU.152 in 25 days. The Russian troops nicknamed SU.152 "The Animal Killer" because of its alleged ability to destroy the Panther and Tiger tanks.

The SU.85 was designed by a team composed of S. N. Machinowa, L. I. Gorlickiego and L. S. Trojanowa, a woman engineer, and was built at a factory at Uraimasz i Czelabinskie. By the end of 1943, 100 vehicles had been produced and they fought in 1943 on the Dneiper and Ukraine fronts.

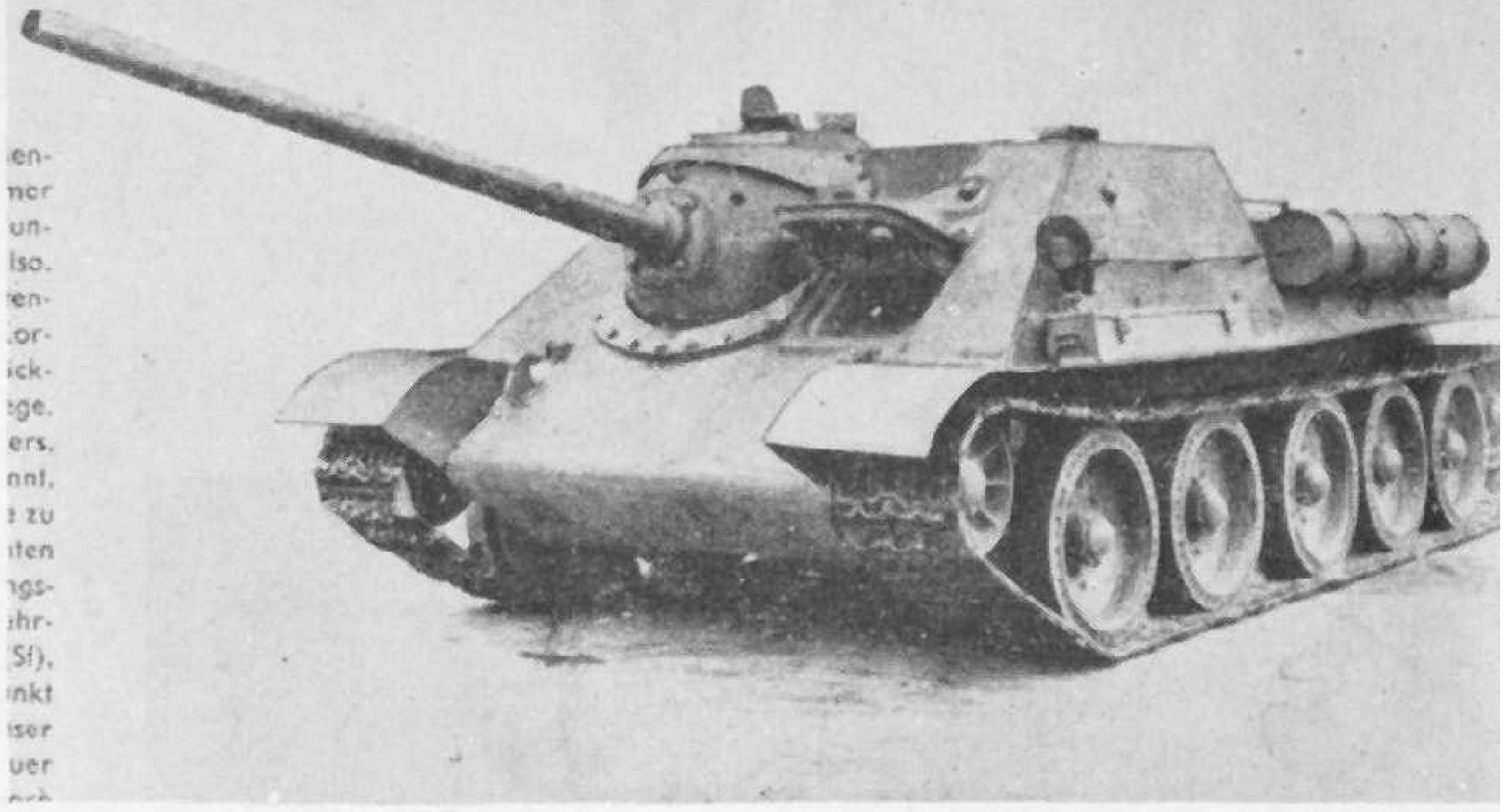
At the time of the introduction of the SU.85, the T-34/85 was also about to come into service. This, and the fact that the German heavy tanks were being met in increasing numbers, pointed to an unmistakable requirement for yet a heavier tank destroyer. This was met by replacing the 85 mm. anti-tank gun in SU.85 with the 100 mm. in the SU.100 in 1944. By the end of that year, 500 had been produced at the same factory. The SU.100 is still in service with the Russian Army and it is part of the arsenal of Poland, East Germany, Czechoslovakia, Rumania, Hungary, Egypt, Syria and Iraq.

A specimen captured by the Parachute Brigade in the Suez operation in 1956 is in the Royal Armoured Corps Tank Museum at Bovington and doubtless the Israeli Army has also acquired some in the Sinai Campaigns.

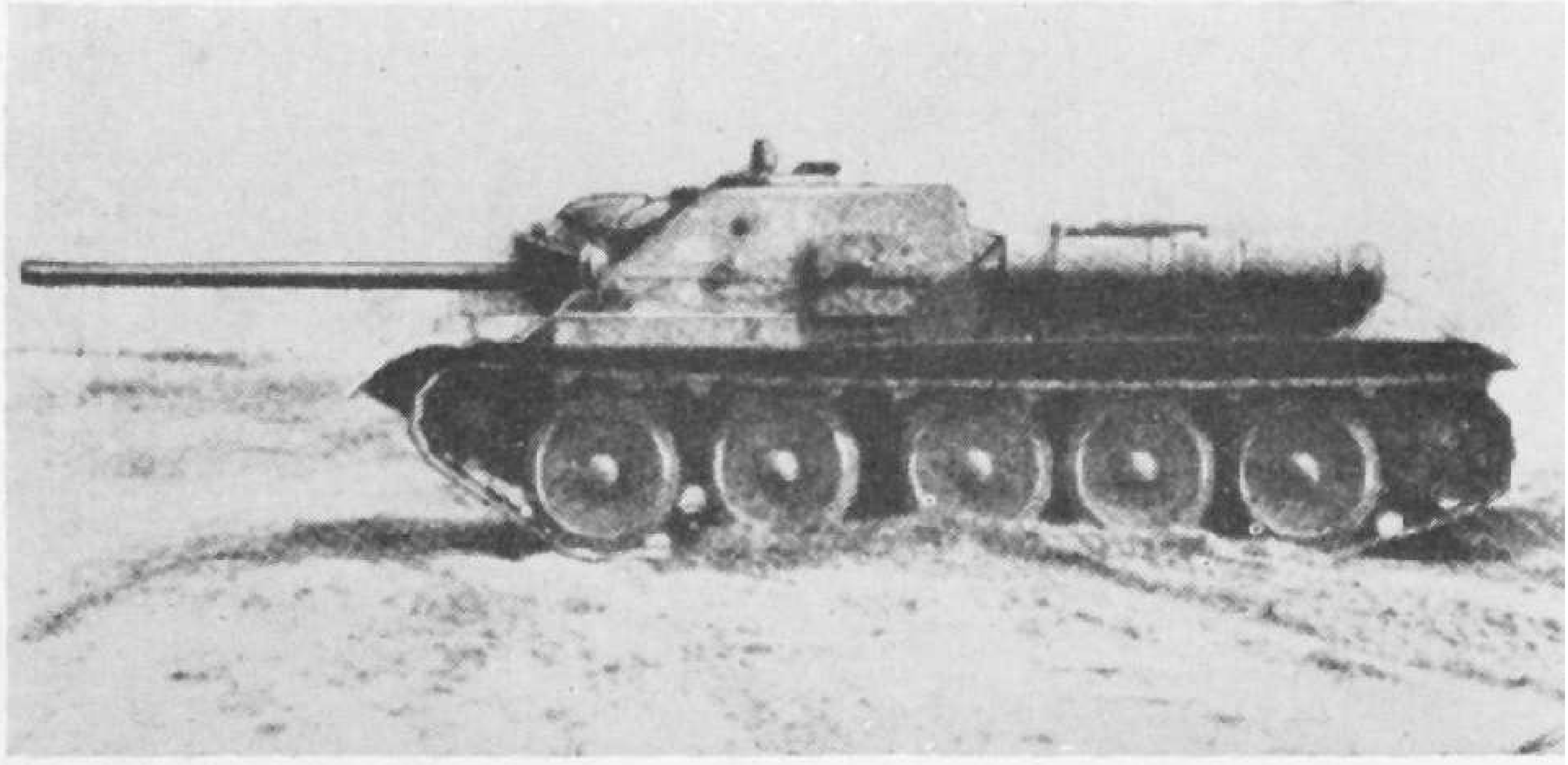
SU.85 AND SU.100 DESCRIBED

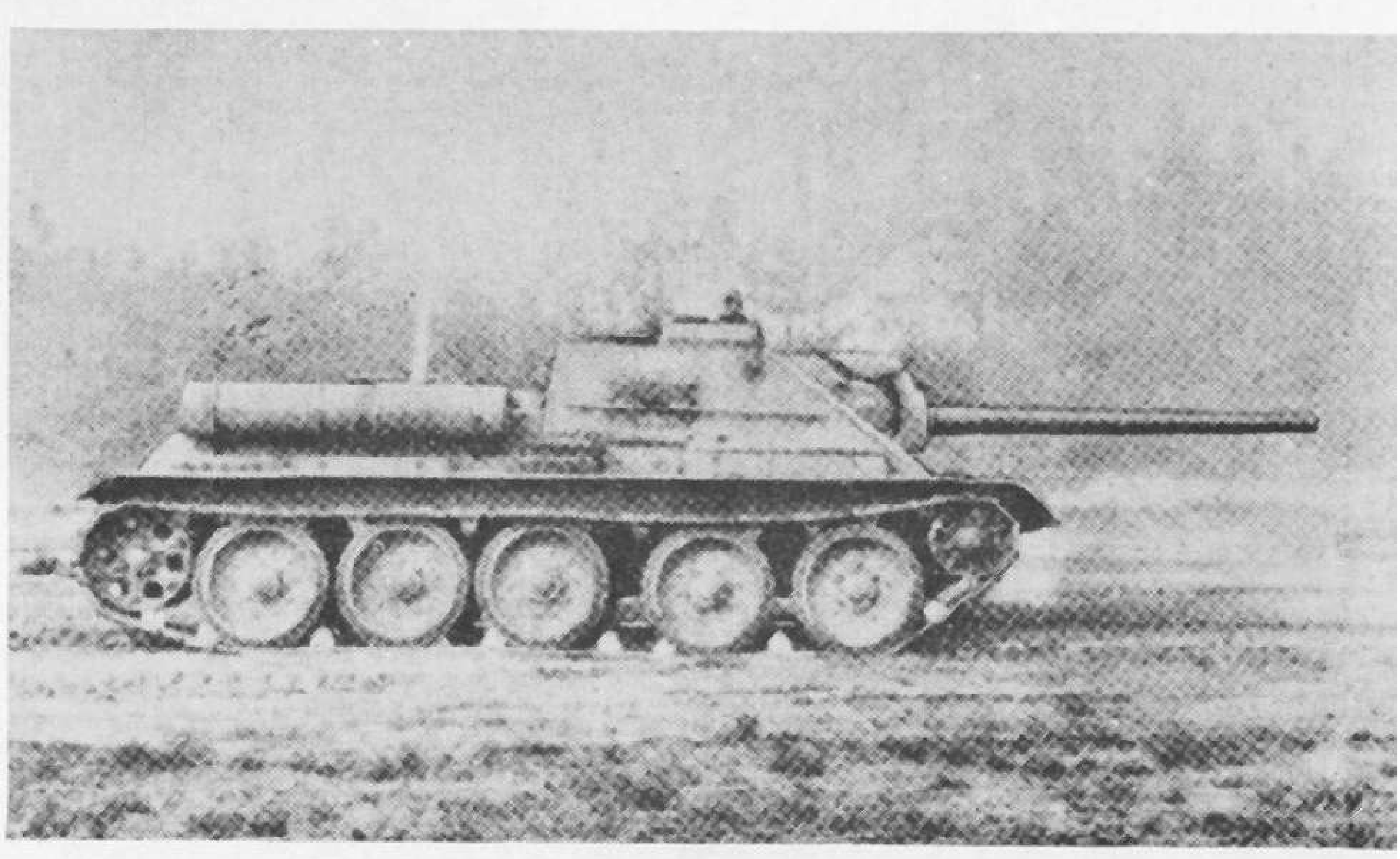
The SU.100 in service today was, and remains, closely similar to its predecessor the SU.85. The hull is of welded construction and the plates are notably well sloped—the glacis plate at 50°, nose plate at 60° and the lower and upper tail plates at 45° and 50° respectively.

The superstructure which houses the fighting compartment has a front plate—which incorporates the glacis plate—rising to the roof at an angle of 50°.



Three standard views of SU.85. The two side views show clearly the characteristic T.34 chassis. In the left side view the driver's hatch is open, partly obscuring the gun mantlet and the gun outline has apparently been retouched, probably for security reasons. The three-quarter front view shows the forward bow of the gunner's hatch at the top of the front plate.
(Photos: Imperial War Museum)

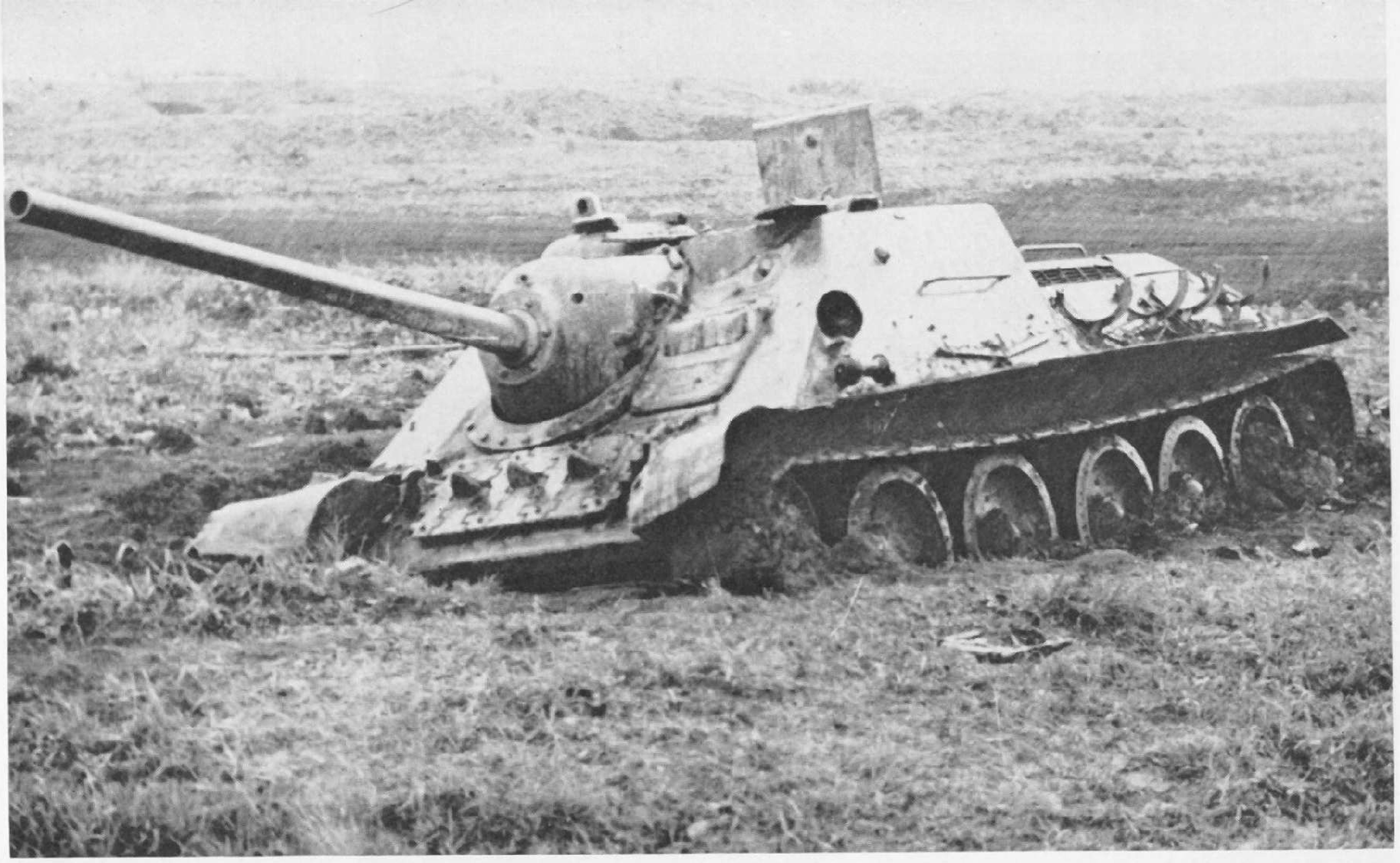




The gun is mounted in this plate, offset to the right of the centre line of the vehicle, flanked on the left by the driver's hinged hatch, and mounted in a gimbal mounting. The superstructure sides are sloped at 20° and on the right is the commander's station, surmounted by a cupola, and partly formed by bulging out the side wall. (This latter characteristic is confined to SU.100 only.)

There is a hinged hatch cover on the commander's cupola, vertical in the open position, and another hinged hatch in the front of the superstructure roof to the left of the gun. There are two mushroom type ventilating cowls to the right rear of the roof.

The driver's position is left forward with the gunner immediately behind him. The loader operates in the rear of the fighting compartment and there is sufficient room for him to move comfortably behind the gun. Ammunition is stowed round the fighting compartment walls, vertically and horizontally and each round is secured by two clips.



SU.85. This abandoned vehicle carries track plates on the glacis for additional protection. Both the gunner's and main crew access hatches are open. The two left-hand external 30 gallon fuel tanks are missing, exposing the carrying cradles.
(Photo: Imperial War Museum)

The engine is the basic T-34 diesel power plant, the type V2, a 60° V-12 cylinder, water cooled, compression ignition unit, delivering 500 b.h.p. at 1,800 r.p.m. It is positioned at the rear in a separate compartment flanked on each side by a radiator and a fuel tank. It is of light construction with the block, cylinder head and crankcase made of aluminium alloy. Bosch type injectors are used, the injection equipment being housed between the cylinder banks.

There are eight fuel tanks with a total capacity of 135 gallons, including four auxiliary fuel tanks with a capacity of 30 gallons positioned outside, on the sides of the engine compartment.

There is an electric and compressed air starter system. The compressed air system is a particular requirement for operating in arctic conditions.

TRANSMISSION AND RUNNING GEAR

A multi-plate dry mechanical clutch is fitted. The drive from the clutch is taken to the gearbox through a splined muff coupling. The gearbox is a simple four forward, one reverse gear unit of sliding mesh type. Steering clutches are carried on extensions of the gearbox secondary shaft. On the driven member of the clutch is a brake drum which is operated mechanically by the steering levers. The final drive consists of single straight spur reduction on each side of the rear of the vehicle.

The suspension is of the characteristic, Russian developed Christie type. There are five large rubber-tyred bogie wheels on each side. The three rear wheels are equally spaced, while the two front ones on either are more openly spaced and there is a larger gap between the second and third wheels. This variation in wheel positions is to even up the weight distribution on all wheels. The suspension is independent with large vertical wheel movement. Concentric, double-close coiled springs are used on the front bogies whilst the remaining suspension stations have two single-close coiled springs.

The tracks are cast manganese steel, with a guide horn on alternate links. The plain plates are drilled and slotted to take grousers to give better traction in snow and mud. The track pins are typical of an uncomplicated design approach. They have a rounded head on the inside of the track nearest the hull and not secured in any way. If the pin works out the rounded head strikes against a double wedge-shaped cam, or wiper plate, attached to the hull and is forced back to its fully home position.

The driver's controls and instruments are as follows:

Foot controls: clutch pedal (left), footbrake (centre) and accelerator (right).

Hand controls: orthodox steering levers, locking device for brakes (right), change speed lever (right), and a hand-operated air pump for priming the fuel system.

Instruments: water and oil temperature gauges (front), oil pressure gauge (front), and (at left): rev. counter, speedometer, ammeter, voltmeter, starter and electrical switches and air pressure gauge for the air starter.

The vehicles operate on two voltages—24 volts for the starter motor and 12 volts for lighting and communications which include a type 9-R transceiver. The aerial base is situated on the right-hand side of the superstructure in front of the cupola. The Russians still use a laryngaphone for crew control and a type TPU3 is fitted in these vehicles.

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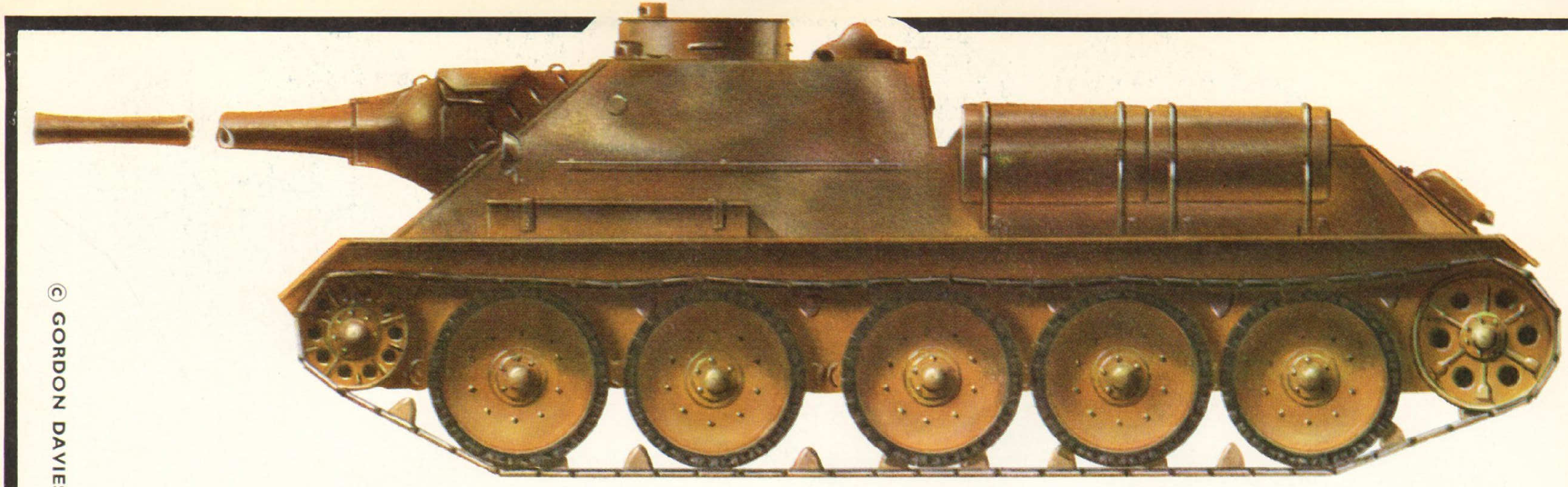
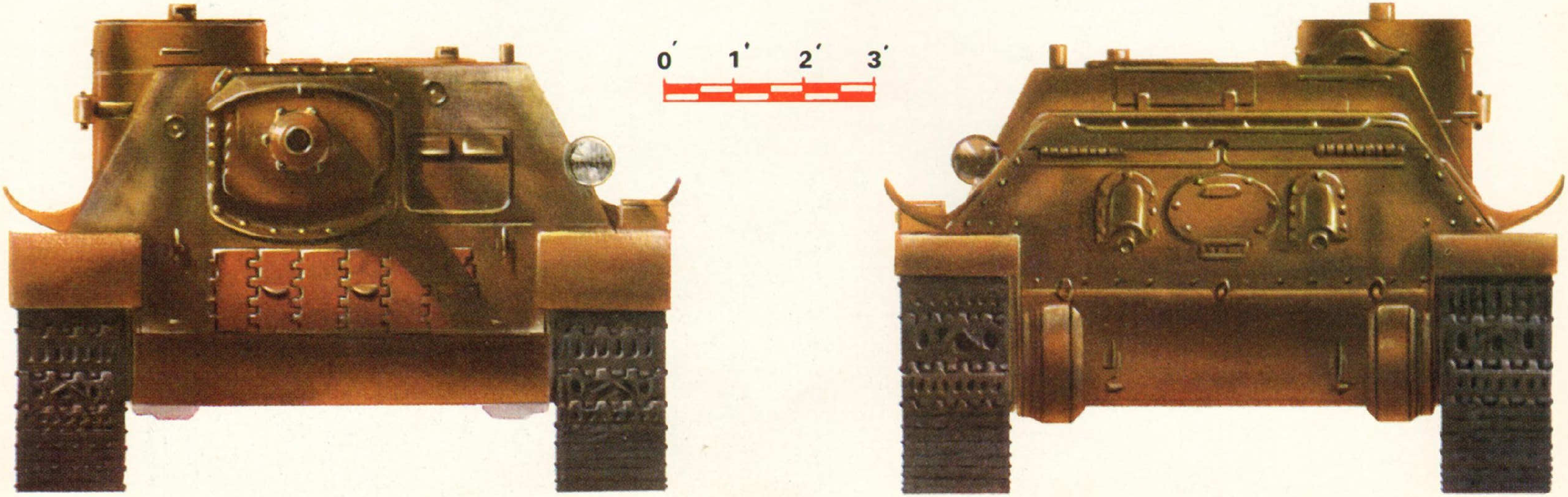


Note: External fuel tanks shown fitted in this view only.

Type D 10.S Gun 100 mm. L55.



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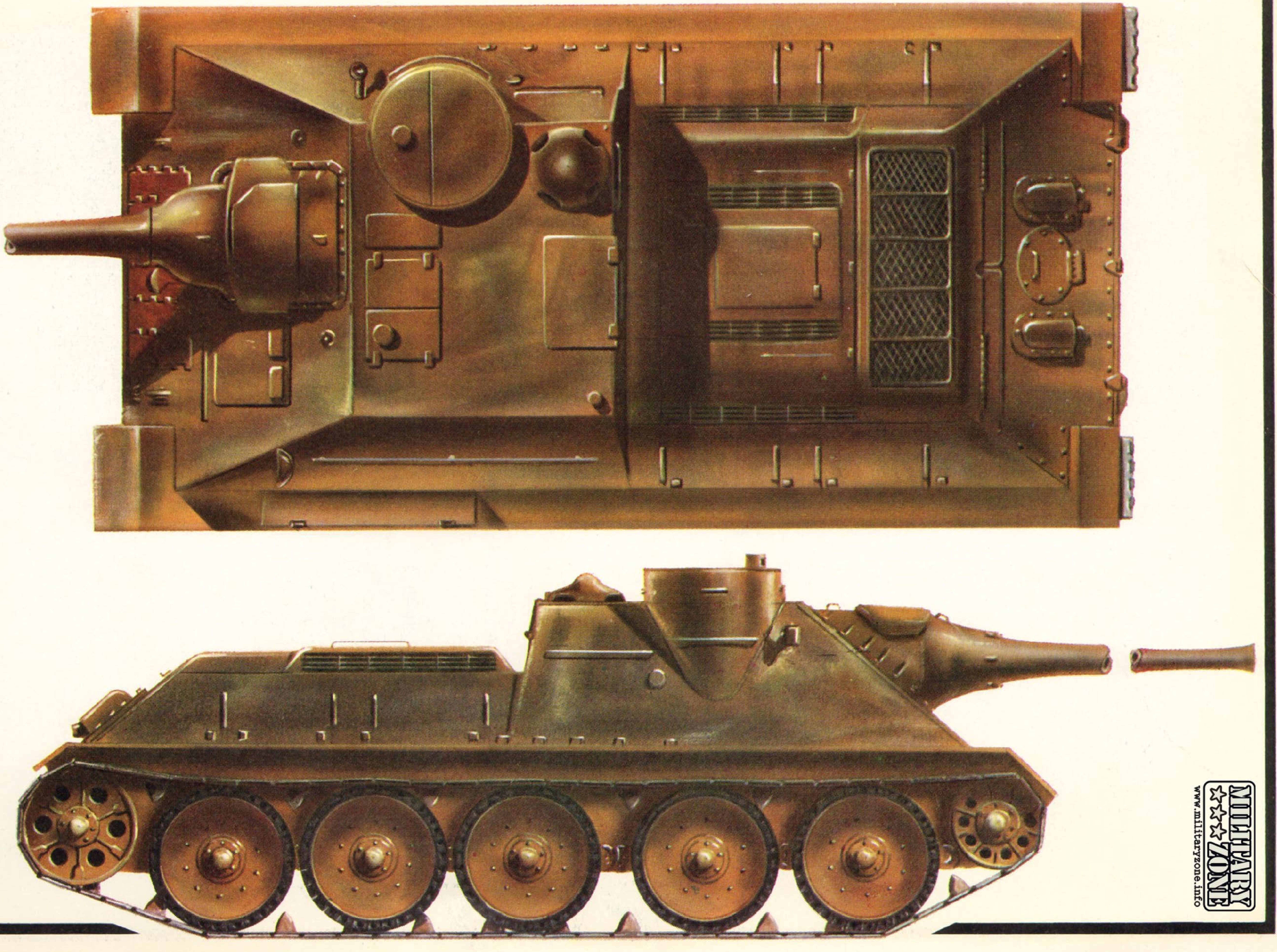


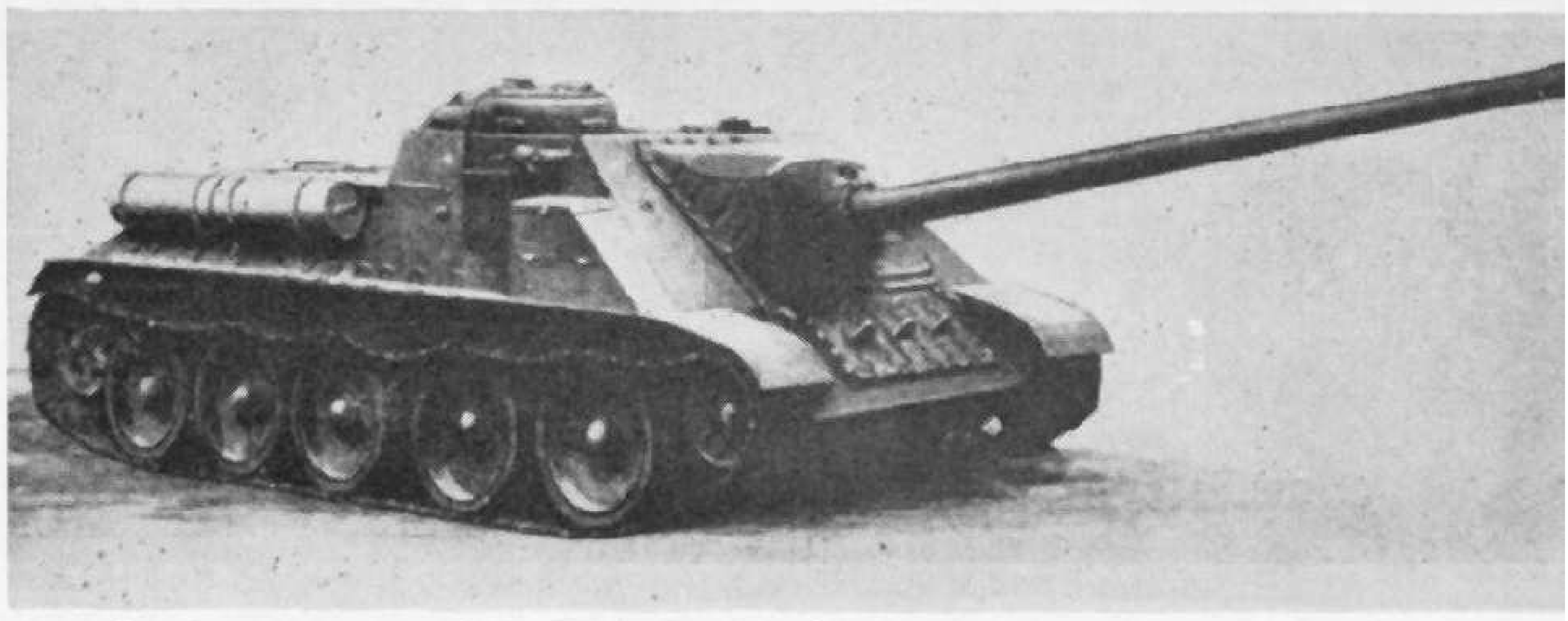
MAIN ARMAMENT

The SU.85 mounted an 85 mm. gun, model D5-5-85. This gun was originally developed as a towed anti-tank gun. It was of 52 calibre in length and fired a fixed round at a muzzle velocity of 2,600 ft./sec. With a penetration of about 100 mm. at normal impact at 1,000 yards, it had a 60 per cent. better performance than the 76·2 mm. in SU.76 which it replaced. The traverse was 10° either side of centre and an elevation of 25° and depression of 5°. The AP HE round weighed 33 lb. with the projectile weighing 20 lb. A total of 48 rounds were stowed round the fighting compartment. The breech block was of the vertical sliding type—semi-automatic.

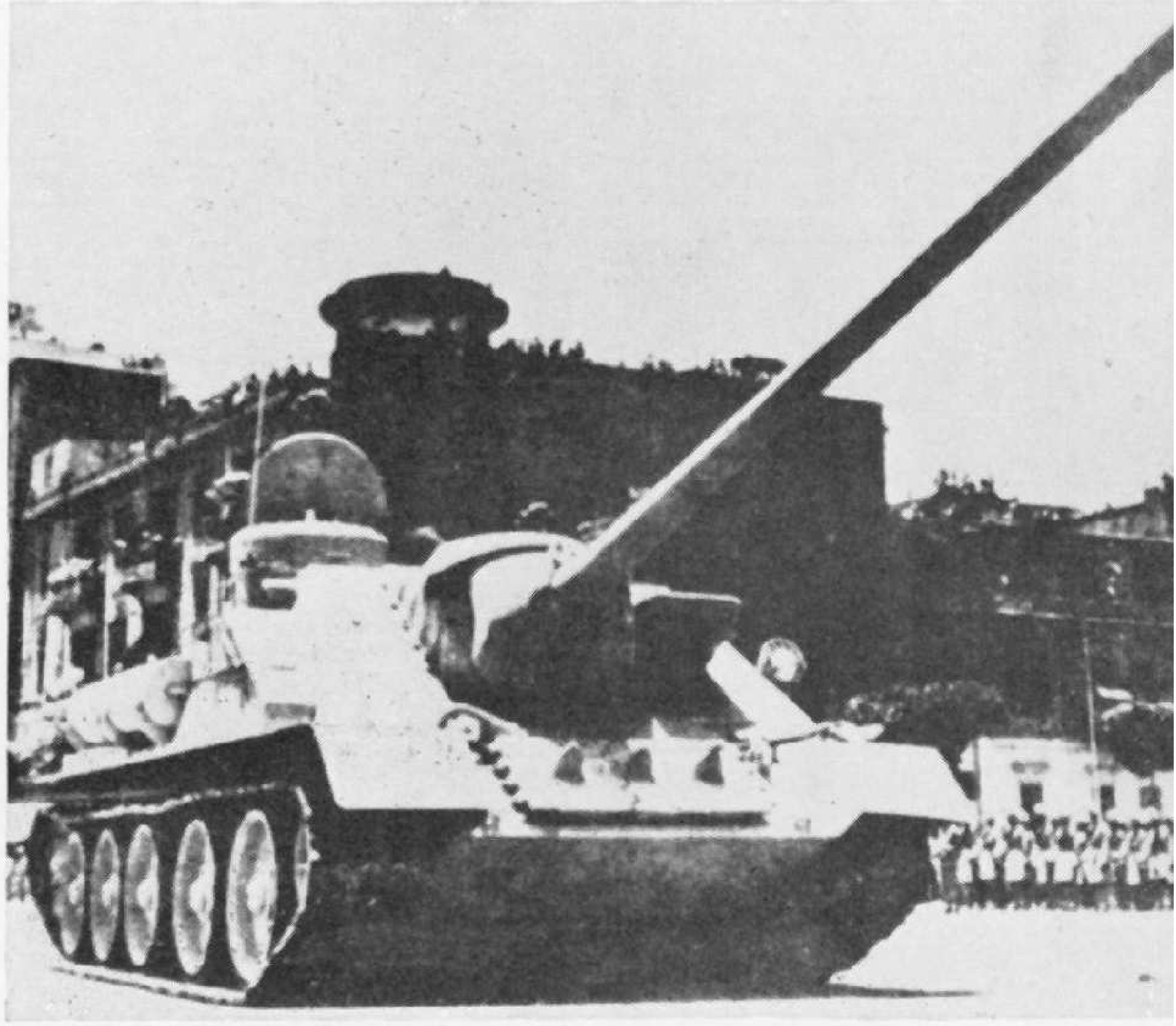
The full range of ammunition is common to the T-34/85 and was HE, APHE (armour-piercing with a small bursting HE filling) and APCBC. Hydraulic recoil buffers and a hydraulic recuperator were carried below the gun.

The main armament of SU.100 is a 100 mm. type D 10.S gun. This is a good, all-round gun. Although it did not have the armour penetration of the contemporary German long 75 mm. and it did not compare with the British 17 Pounder for penetration, it nevertheless threw a heavy HE shell of 35 lb. The AP projectile, which weighed 34 lb., was more than twice as heavy as the long German 75 mm. round and, firing at practically the same velocity, could have considerable disruptive effect on any tanks hit. It is 55 calibre long and fires a fixed round weighing 66 lb. With a penetration of about 160 mm. at normal impact at 1,000 yards, it again had about 60 per cent. better performance than its predecessor on the SU.85. The World War II SU.100 had only 2° depression and 17° elevation with a total traverse of 16°.

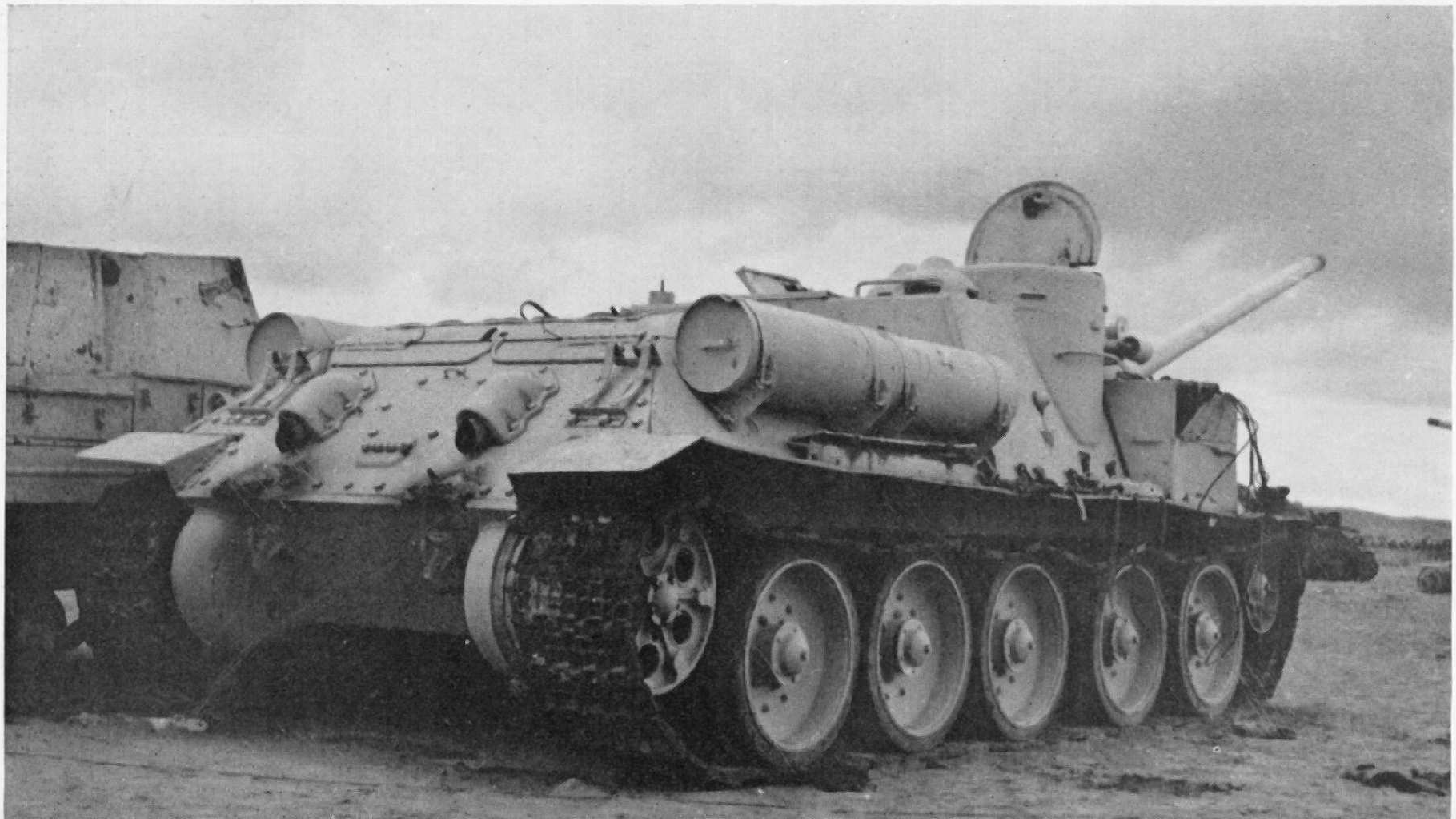
The ammunition is the fixed type (cartridge case and projectile in one piece) and 34 rounds are stowed round the fighting compartment walls. The types of round carried are AP, HE and HE shell fired at a muzzle velocity of 2,900 ft./sec. There is a horizontal sliding breech block, again semi-automatic—i.e. after the gun has fired, recoiled and run back to its forward position, the breech is left open ready for the loading of the next round. The hydraulic buffers and recuperator are positioned above the gun.



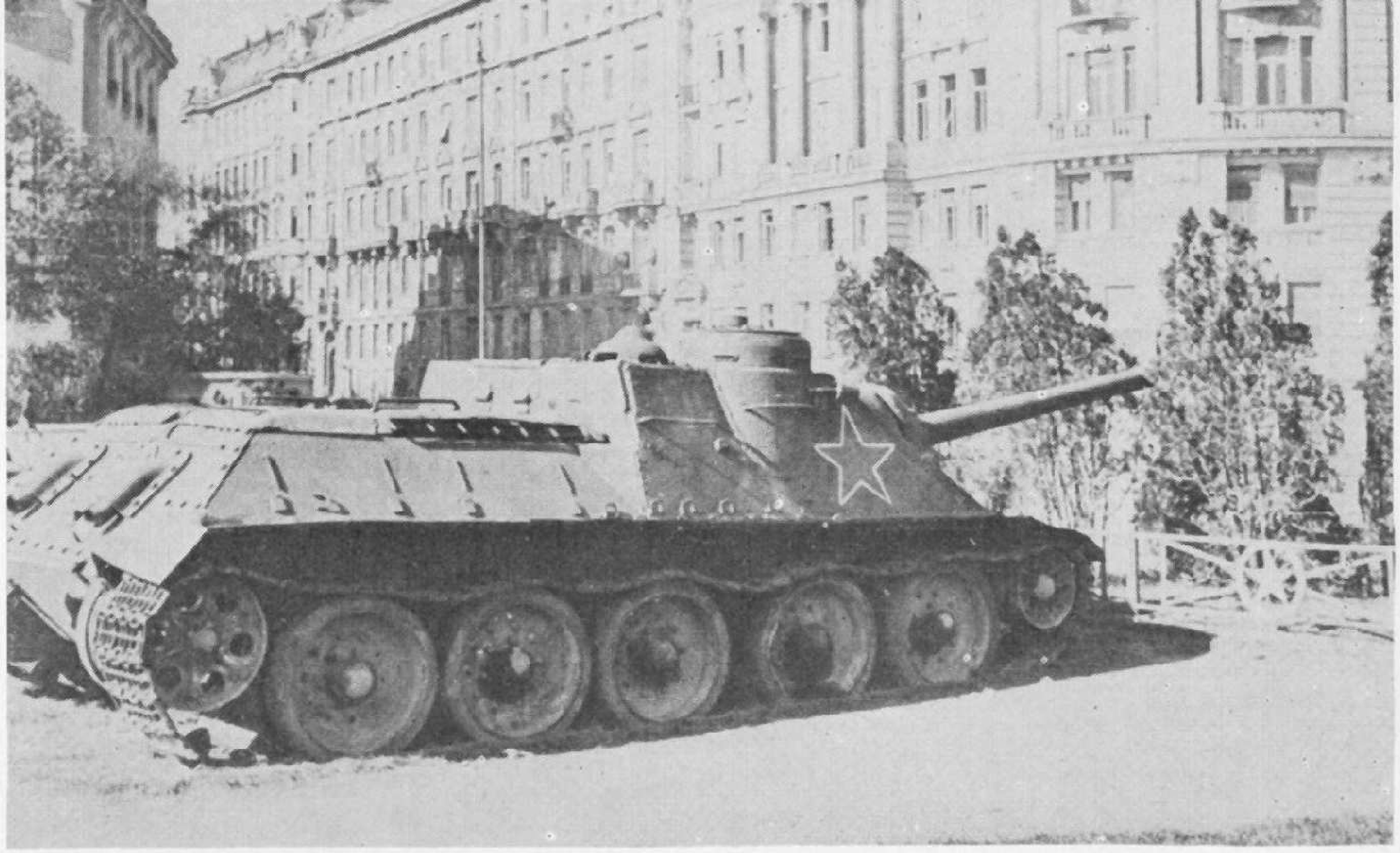
Standard post-war SU.100 in Red Army service. Note the additional external stowage bin which became standard and appears on, for example, all Egyptian models.
(Photo: Imperial War Museum)



Czech SU.100 parading in Prague. (Photo: Chamberlain Coll.)



Abandoned Egyptian SU.100 which fell into French hands at Suez, 1956. Note the two mushroom ventilators behind the cupola.
(Photo: E. C. Armées)



SU.100. A standard Red Army wartime model, photographed in 1944. Note the crudely welded joints of the fighting compartment superstructure. (Photo: School of Tank Technology)

OBSERVATION

The SU.100 has a raised commander's cupola, the roof of which rotates. The rotating hatch of the cupola houses a panoramic periscope, and the cupola has five episcopes. In the gunner's hatch there is a rotating periscope.

The SU.85 has a fixed periscope in the commander's hatch, one episcope for the wireless operator on the left front of the roof and two episcopes in the cupola at the front and rear on the outside of the commander's cupola. A Goertz dial sight, carried on the SU.85, was not fitted on the SU.100 because, by the time the later vehicle was introduced, it was clear to the Russians that this indirect fire instrument was unnecessary.

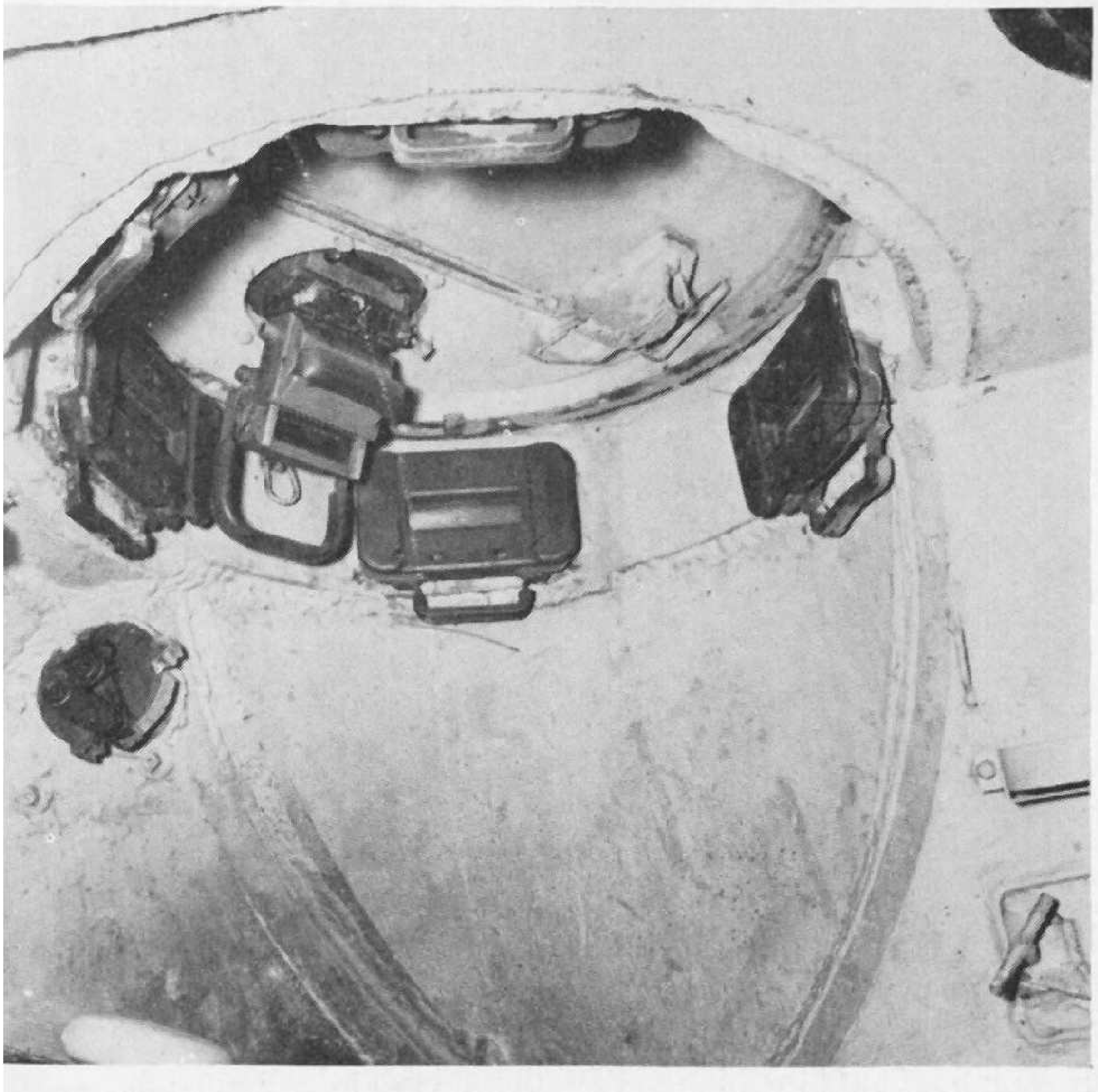
HYBRIDS

The only two hybrid vehicles produced from the SU.85 and SU.100 series were an armoured recovery vehicle and a command post vehicle.

The ARV had no gun. The front plate was uninterrupted armour from the nose plate to the roof and there was a winch and anchors to assist in recovery.

The command vehicle was indistinguishable from the ARV externally.

Interior views of SU.100 showing (left) the interior of the commander's cupola and (right) gun breech and recoil buffers and, lower left, the driver's position and controls.
(Photos: R.A.C. Centre, Bovington)



TACTICAL EMPLOYMENT

The tactical employment of the SU series derived from their distinctive characteristics which differentiated them from tanks. These can be summarised, tactically, as follows:

The advantages of the SU over a tank on the same hull are:

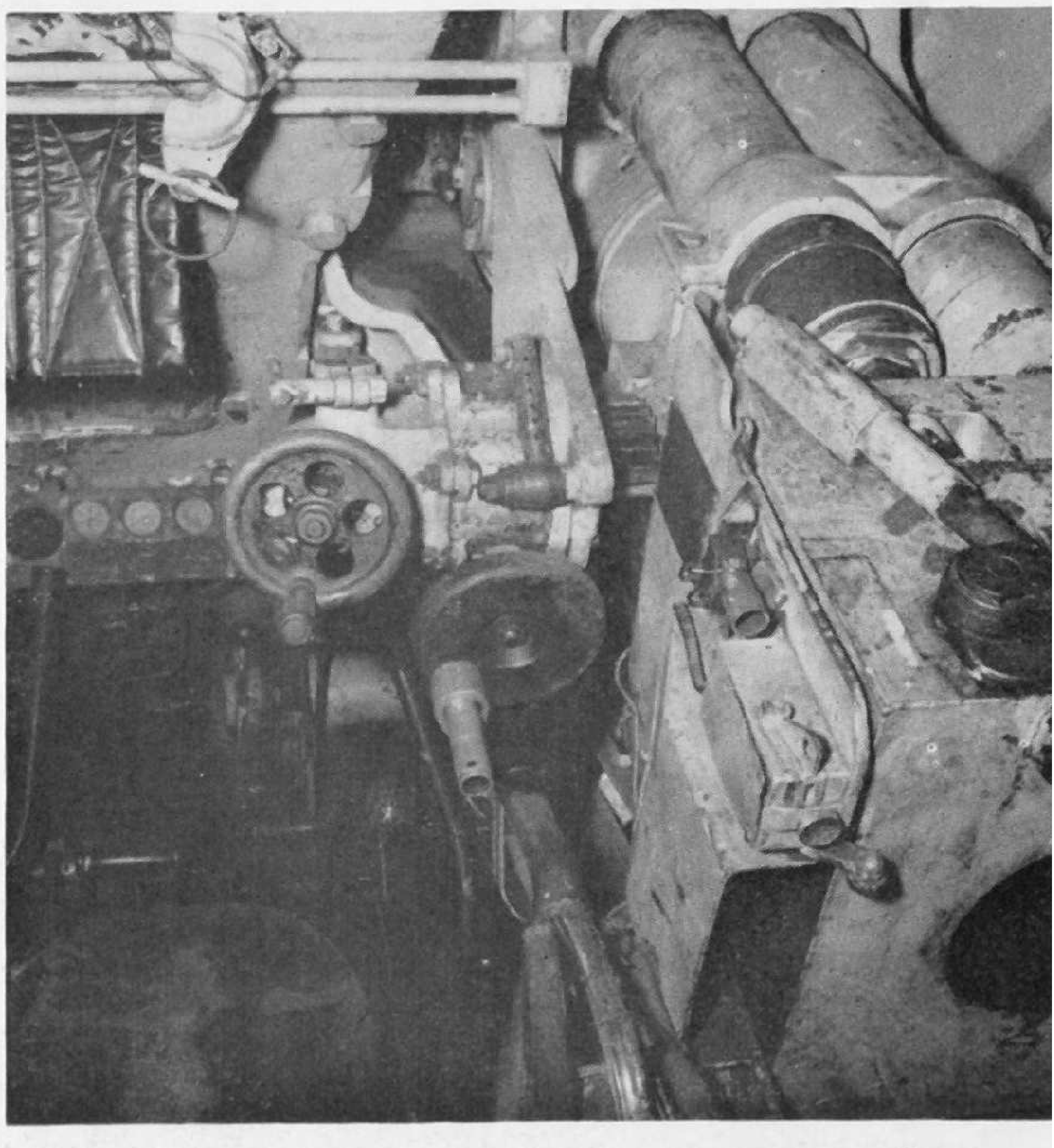
It can mount a more powerful gun.

Alternatively it can mount a smaller gun but have thicker armour.

Its frontal aspect presents a much smaller target to the enemy.

Because it has no turret it avoids "shot traps" between the hull and turret. It is less vulnerable because it has no turret ring and race. Tanks are frequently put out of action by strikes that do not penetrate but damage the turret ring and so prevent the turret traversing.

More ammunition can be carried and a higher rate of fire can be achieved.



SU.85 advancing with infantry on the Russian Front. Winter 1943–44. *(Photo: Imperial War Museum)*

Because of its lower silhouette it can take advantage of small features and depressions which make it more suitable for "stalking" the enemy. Owing to its low height, there are many times when it can fire underneath the branches of trees, whilst the higher sighting equipment of the tank is masked by the foliage.

The production effort and cost can show more than a 20 per cent saving over the conventional tank.

The disadvantages of the SU are:

Its limited traverse makes it unsuited to offensive mobile operations. If the arc of traverse was increased, then the gun size would have to be reduced.

The side silhouette of an SU presents a larger area than a tank.

It follows that the advantages of the SU are best realised when used in restricted rôles such as anti-tank and fire support. They are not suited for shock action.

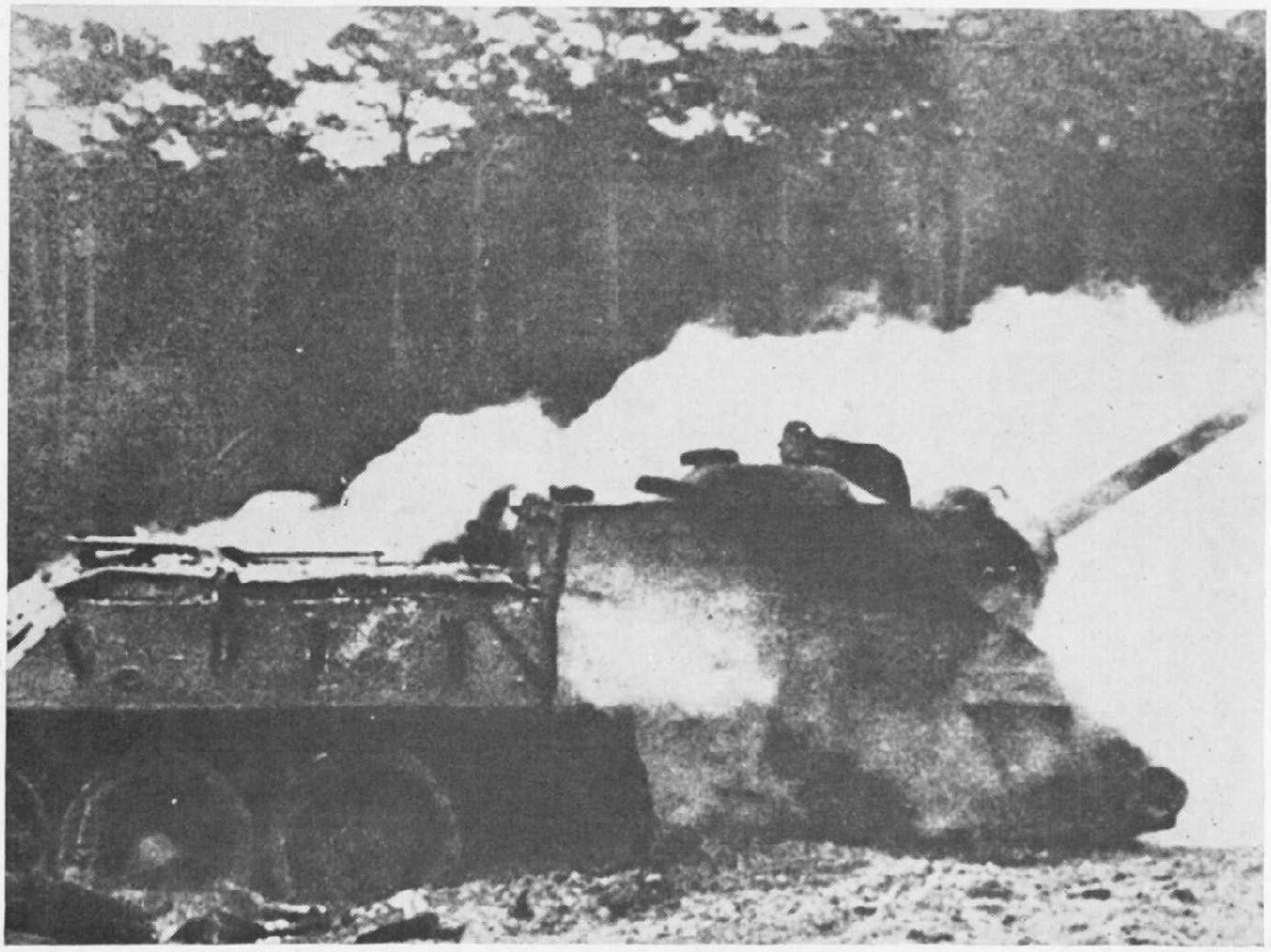
The advantages of the SU type of equipment in defence, however, are reflected unmistakably when the German AFV production figures for World War II are considered comparatively. While the German armies were on the offensive up to 1942, the principal armoured vehicle required was the tank. In late 1942 they had to adopt a defensive rôle and production of assault guns and tank destroyers in 1944 increased to ten times the 1942 figure, while tank production only doubled in the same period.

The Russians likewise appreciated the value of the SU when they had been on the defensive from July 1941 until November 1942. The General Staff formulated the requirement for the SU in this context and no doubt, if they had remained on the defensive, their production of SUs would have increased at the expense of tanks. But in 1944 Russians produced approximately 14,000 tanks as opposed to 3,000 SUs.

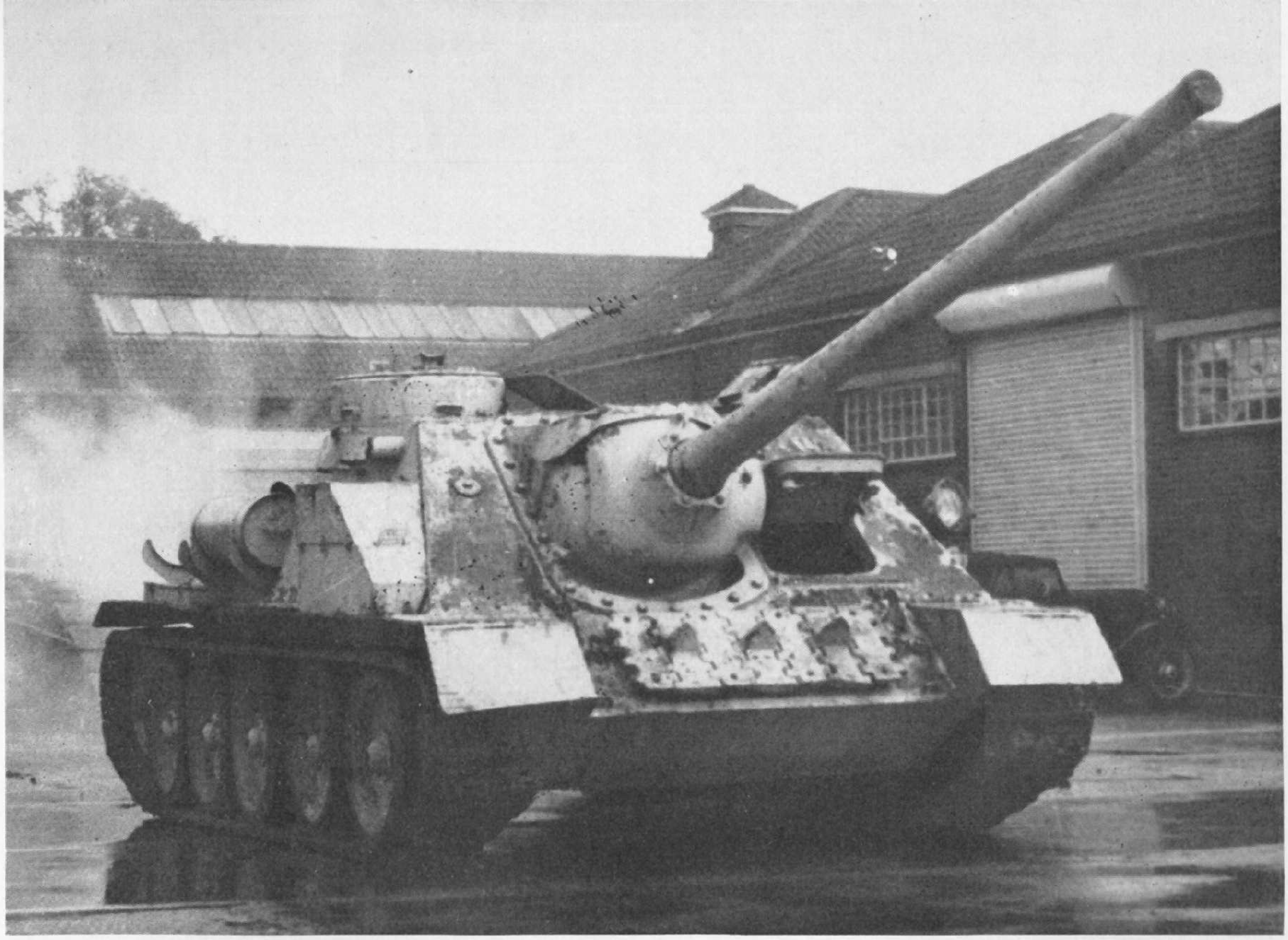
THREE DISTINCT ROLES

During World War II there was an SU Battalion in each Tank Division and an SU Battalion in each Regiment (British Brigade) in the Mechanised Division.

Because the SU.85 and SU. 100 were armed with tank cannon, which were dual-purpose weapons—firing both high explosive



German propaganda picture of an abandoned, shattered and burning SU.85. (Photo: Imperial War Museum)



Late production SU.100 captured by the U.K. Parachute Brigade at Suez, 1956. This perfect, wholly intact specimen can be seen at the Royal Armoured Corps Tank Museum, Bovington, Dorset, where it is shown here out on a trial run.
(Photo: Tank Museum Library)

and armour-piercing ammunition—they were infinitely more flexible tactically than a tank destroyer—the British Archer, the American M10 or the German assault gun, *Sturmgeschütz*. It is of interest to note that the British and U.S. Armies never produced assault guns. The SU was manned by Russian armoured troops in contrast to the German fashion where the assault guns were manned by the Artillery arm.

The SU had three distinct tactical rôles: they were used as field artillery—always using direct fire—as anti-tank artillery and as tanks. When used as tanks they were never expected to replace these vehicles in the forward assault wave or the counter-attack.

In the anti-tank rôle they were much more flexible than the towed anti-tank gun. Because of their mobility and armour they could readily take up alternative positions when an attack developed, the armour protecting the crew whilst, with the towed anti-tank gun, changing position under fire was a most dangerous, if not impossible, task.

Whenever possible they were also used to bring enfilade fire from the head of a re-entrant or valley.

The great limitation which the SU.100 suffered in the anti-tank rôle was its severely limited depression. Its maximum was 2°. This meant that on a reverse slope of about 1/20—equivalent to 2°—it could only fire down to the horizontal plane. This was such an insuperable handicap that the Russians had to resort to digging in the SU if they could not site it in defilade.

Digging in a vehicle of this size is a gargantuan task, even for such well known excavators as the Russian troops, and is almost impossible without bulldozer assistance. Because of this limitation the SU.100 was frequently concealed in the edge of a wood or in a building. The SU.85 was better in this respect, because it had 5° depression and post-war models of the SU.100 had the depression increased to 4°.

In the artillery rôle the function of the SU was the same as a British tank when giving fire support to advancing tanks. The SUs were positioned on the bound immediately behind the assault waves and their task was to neutralise any weapon that impeded the advance of the assaulting tanks. While the SUs were giving this immediate support against opportunity targets, the field and medium artillery, reinforced by multi-rocket launchers, would be plastering selected targets and the objective. This type of direct support fire is much quicker in neutralising targets than artillery fire directed by a forward artillery observer. If the assault takes the objective then the SUs move to the objective and take up position ready to repel a counter attack, while the assaulting tanks and troops exploit forwards.

It appears that the Russians have now given up the development of the SU and JSU in favour of lighter airportable equipment, notably the ASU.57 and ASU.85. This relegation of the SU into obsolescence, is no doubt also because the JS 3 and T10 both mount a 122 mm. gun and there can be no further place in their armoury for a limited traverse vehicle mounting a weapon of the same size.

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Spearhead of Victory: SU.85s and Soviet Infantry advancing along Berlinstrasse, 1945. *(Photo: Imperial War Museum)*

SPECIFICATION SU 85 TANK DESTROYER

SU 85	SU 100
General Crew: Five—commander, gunner, loader, wireless operator and driver. Combat weight: 29 tons. Dry weight: 28 tons. Power/Weight ratio (b.h.p./ton): 17. Ground pressure: 11·2 lb. sq. in. Bridge classification: Class 30.	Four—commander, gunner loader and driver. 29·5 tons. 28·5 tons. 16·9 b.h.p./ton. 11·4 lb. per sq. in. Class 30.
Dimensions Length overall (gun to front): 26 ft. 8 in. Hull length: 19 ft. 5 in. Height: 7 ft. 9 in. Width: 9 ft. 10 in. Track centres: 8 ft. 2 in. Track width: 1 ft. 8 in.	32 ft. 8 in. 19 ft. 5 in. 8 ft. 4 in. 9 ft. 10 in. 8 ft. 2 in. 1 ft. 8 in.
Armament 85 mm. gun DS-S 85. Tail smoke pots.	100 mm. D.10-S. Some vehicles carried a 12·7 A.A. machine gun on a pintle mounting on the commander's cupola.
Fire Control Hand traverse and elevation. Percussion firing, solenoid and mechanical.	Hand traverse and elevation. Percussion firing electrical solenoid and mechanical.
Ammunition HE shell. APHE (armoured piercing high explosive). APBC (armoured piercing ballistic capped). 48 rounds.	APHE. HE shell. 34 rounds.
Sighting and Vision Two episcopes protected by armoured flaps in driver's hatch. A panoramic periscope in commander's cupola (P.T.K.). Two episcopes at front and rear of commander's cupola. One episcope on right side of roof behind cupola. One episcope on right rear of roof behind cupola. One episcope on left front of roof. One gun telescope. One Goertz dial sight.	Two episcopes in driver's hatch. Five episcopes in commander's cupola. Panoramic periscope in cupola hatch. A rotating periscope in gunner's hatch. One telescope for gunner—T Sh-19. One episcope in right of superstructure rear plate.
Communications Crew intercommunication TPV—3 laryngaphone. Wireless set 9-R transceiver.	Crew intercommunication TPV—3 laryngaphone. Wireless set 9-R transceiver.
Armour Rolled homogeneous armour. Welded—Brinell No. 370.	As SU 85 except that the front armour of the SU 100 is thickened to 78 mm.
Hull Glacis plate and front: 45 mm. at 50°. Nose plate: 45 mm. at 60°. Side plates: 45 mm. vertical. Rear: 45 mm. at 50°. Belly: 20 mm. horizontal.	The mantlet is: external 100 mm. rounded; interna 80 mm. rounded.
Superstructure Front: 45 mm. at 50°. Sides: 45 mm. at 20°. Rear: 45 mm. at 15°. Mantlet: 45 mm. rounded.	
Engine Type W.2 diesel. 12-cylinder vee water-cooled. Capacity: 38·88 litres. B.h.p.: 500 b.h.p. at 1,800 r.p.m. Fuel: 135 gallons stowed in eight tanks. Two tanks on either side of fighting compartment. One at each side of final drives. One at each side of engine compartment. Four auxiliary tanks holding 30 gallons on either side of the hull. Fuel consumption: 1·1 miles per gallon.	Transmission, suspension and electrical. As SU 85.
Transmission Clutch: multiplate dry. Gearbox: sliding mesh—four forward, one reverse. Drive: spur reduction. Sprocket: rear. Steering: clutch and brake.	
Suspension Tracks: cast manganese steel. Width: 1 ft. 8 in. Number of plates: 72. Pitch: 6·9 in.	
Electrical 24 volts for starter. 12 volts for lighting and communication. 1,000 watt generator. 4 × 12 volts. 120 amp./hr. batteries.	
Performance Maximum speed: 34 m.p.h. Gradient: 35°. Vertical obstacle: 2 ft. 3½ in. Trench: 8 ft. 2 in. Wading: 4 ft. 3 in. Radius of action: 186 miles. Fuel consumption: 1·1 miles per gallon. Ground clearance: 1 ft. 4 in.	As for SU 85.

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